

### **REMARKS/ARGUMENTS**

Claims 1-20 are pending in this application. By this amendment, claims 1-5 are cancelled without prejudice. Claim 6 has been amended to further clarify elements of the system. Amendments to claim 6 are supported by the description in now cancelled claims 1-5 and by the description in the specification, including, for example, at (page 5, line 23-page 6, line 2), (page 6, lines 12-22), (page 36, lines 3-18), and (page 39, lines 2-18).

In considering the electronic commercial transaction supporting system as claimed, for example, in Claim 6, the correspondence generating unit specifies a correspondence relation between search keywords (which the customer gave when beginning a search for the desired merchandise) and information, utilized by the customer, among information on the merchandise presented from the shop as a result of the search as specified under the equivalence relation. Further, if the thus specified correspondence relation is new, the search keywords are recorded in a manner that they are associated with the information that the customer has used from among all the information on the merchandise. For instance, in the example of FIG. 5, the attributes such as "white or blue" and "round-like" that the customer has inputted as the search keywords are newly associated to the "photograph" of a teacup which is presented as a search result and then these attributes are recorded in the attribute correspondence table. The attribute "European made" that the customer has inputted is corresponded to

an attribute of the merchandise description 86 for the teacup and is then recorded in the attribute correspondence table.

Furthermore, according to the electronic commercial transaction supporting system of the present invention, the correspondence presenting unit 104 reads out and presents the correspondence relation between the attributes stored in the table on another occasion of the transaction. For example, when another customer wishes to purchase a teacup on another occasion and specifies "white" or "blue" as the color, the teacup shown in Fig. 5 is also extracted as a candidate. In this way, even if, during a search, one or more of the attributes like "white", "blue" and "European made" may not exist as attributes for the merchandise, the search keywords given by the customer in each search can create new attributes like "white", "blue" and "European made" that are corresponded to the existing attributes "photograph" and "merchandise description" and then stored in the attribute correspondence table. This allows the merchandise to be searched in the future with new attributes. In this manner, in the system according to the present invention, the correspondence relations extracted based on the equivalence classes in the past transactions are automatically accumulated and updated and will be utilized for future transactions.

Applicant submits that, at least, the features of having correspondence relations between attributes inputted by the customer and attributes of merchandise be specified as equivalence relations and wherein when the acquired correspondence relation is new, the new attributes input by the customer are then corresponded to the existing attributes, as more specifically claimed in claim 6 are neither taught nor suggested by

the cited references (Durphy et al. or Durphy et al. combined with Spiegel et al.)

Applicant further submits that the feature of "wherein the correspondence presenting unit reads out and presents the correspondence relations stored in the table at a stage of another transaction", as claimed in claim 6, is neither taught nor suggested by the cited references (Durphy et al. and Durphy et al. combined with Spiegel et al.)

This ability to adaptively create new attributes and correspondence relations and reuse them in later transactions provides the effect that "the history or actual results will be effectively used throughout future processes and, extremely speaking, wastage of human thought activities which are repeated innumerably in the world can be significantly reduced." (See page 6, line 25, page 7, line 3)

Applicant further submits that the present application also provides a solution to a long-felt but unsolved need. As described below, Applicant believes that the technical domain of the present application encompasses an important social need, that no conventional technology has been available to meet this need, and that the present invention provides a novel and advanced technology that meets this need.

As described in page 1, line 16 to page 3, line 5 of the present specification, conventional relational models, based on a so-called "world model", assume the presence of a manager who carries out a unified or centralized management of the interdependent relations between all the data or attributes involved. These models may be meaningful if information is confined within a closed independent place like a company. However, in the cyber world, which keeps growing on a global scale with local activities intermeshed with one another on the Web, there is no manager that can

exercise unified control over the interdependent relations of data and attributes that may appear in mutually unrelated businesses. The present invention relates to a technology to be implemented according to a modeling guideline that is not dependant on an information model operating on the "world model" concept and, in particular, does not assume the presence of a manager who carries out a unified or centralized management of the interdependent relations between all the data or attributes. The present application provides a novel information model by enabling the addition of correspondence relations between attributes formed at a local site to a global site and the reuse of multidimensional information in a complex system like the Web.

For example, it is an important social issue as to whether or not fair trade is assured in electronic commerce being conducted on the Web. This issue arises primarily because equivalence relations can not be established between the information handled by the seller and the information handled by the buyer in electronic transactions. Hence, the fairness of any transaction cannot be assured based on theory.

Conventional design techniques for electronic transaction systems are such that, at the design stage, it is essentially impossible to verify the presence of any equivalence in a transaction before the designed system is put to use. In contrast to this, the electronic commercial transaction supporting system according to the present invention makes it possible to assure equivalence in commercial transaction at a system design stage and, thus, automatically ensure fair conduct in trade when the system is operated. Hence, this system is believed to provide for a large social impact on electrical commercial transactions.

As an example of a conventional technology illustrating long-felt need, search systems on the Web are considered. Conventional search systems are devoid of a basic model for handling, in a unified manner, the network of information that is present in a complex system. Such search systems use information models based simply on a link structure (sometimes called "graphs"). Thus, these search systems can only continue to set up links among pieces of information when handling a network of information that keeps growing and expanding.

Moreover, conventional search engines on the Web generally provide ranking of Web contents. In the ranking of web logs ("blogs") in particular, a problem called blog noise arises. In this problem, a link structure called "track back" within a blog gives an unintended or false effect on the ranking result and thereby raises the relative ranking of the blog. This problem illustrates that a "graph" methodology cannot singly cope with sudden changes in the Web environment, such as the popular use of blogs. Therefore, there is a need for a search system that can use equivalence relations as invariants. A Web search system according to the present invention can handle attribution relations in the set theory of blogs as equivalence relations and can be designed to classify, by the equivalence relations, the aggregate of blogs into equivalence classes that can be represented as the exclusive OR of its subsets. This allows an automatic and clear distinction between transactions closed inside the equivalence classes and transactions that are outside the equivalence classes, thus resolving the problem of blog noise.

The following paragraphs describe a further example of the distinctive benefit and significant effect of the present invention in contrast to other known technologies.

In an ER (Entity Relationship) model, relations between entities are defined in graphs. In these models, because of the freedom the designer can exercise in defining the relations a different system is generated for every implementation. According to graph theory, arbitrary node pairs can be connected or interrelated with links, and it is not possible to define invariants by eliminating arbitrariness. This is a problem intrinsic to graph theory itself, thus making graph theory primarily unsuited to system design. Accordingly, if a plurality of systems implemented on an ER model (based on graph theory) are to be unified, it is necessary to have work processes matching the number of combinations of constituent elements to be unified. This will call for considerable time and energy to carry out the system unification.

Relational database (RDB) models, ER models, XML using tags, UML using graphs, etc. are being studied and put to actual applications around the world. These models, however, do not yet present any perfect model as a theoretical basis for structuring a large-scale distributed information system. For example, these models do not offer any theoretical system capable of handling the interface specifications between modules in a unified manner among different sites. The SAP, UML (Unified Modeling Language), etc., are based on the ER model, and are all intuitive graph theory models, which present a similar problem because of the inability of the models themselves to handle equivalence relations. This is a barrier to be surmounted in designing and operating an electronic transaction system or a search system on the Web.

One particular commercial system called ARIS (See <http://www.ids-scheer.com>) provides a type of visualization software typically used for information system

specifications. This system is actually being used for visualizations of an organization and corporate management. ARIS supports UML (Unified Modeling Language), but the UML is no more than a modeling technique that interrelates classes with links and represents the attributes incidental to the links by new classes called relational classes. Thus, ARIS cannot provide direct correspondence with relational models on the model level. For this system, which is based on an intuitive graph theory, the check mechanism for equivalence relations is missing from the system basics. As a natural consequence, ARIS can only visualize the correspondence relations defined by the graphs and cannot perform an automatic checking of the validity of correspondence relations. With ARIS, it is possible to visualize a complex business organization of an enterprise spreading infinitely wider like a spider's web, but Applicant submits that it is impossible to check for correspondence errors. As such, the ARIS system does not satisfy the long-felt need in the way that systems according to the present invention do.

As described above, conventional systems provide technologies for developing information systems, such as enterprise information systems, electronic transaction systems, electronic production systems and search systems, but only do so as individual systems. Thus far, system architecture has not been successfully automated and it has been necessary to rely on manual construction. Applicant submits that, in a broad sense, this has brought about the situation known as "information explosion". The real problem is the absence of a methodology for handling all the information systems of modern society in a unified manner.

Systems according to the present invention employ an information model that

uses identification based on equivalence relations as its theoretical foundation. These systems can define invariants among information systems and optimize and objectify the processing of information based on said invariants. According to the present invention, therefore, one system can be developed that can be the basis for a very wide variety of information systems and provide the automation for structuring and building these information systems. Thus, systems according to the present invention can provide a basic solution to the problem of information explosion in a broad sense. In terms of commercialization, the present invention presents the possibility that cultivation of customers in one type of business can be used in developing information systems for many other types of businesses. Applicant believes that this type of capacity will have a tremendous power in modern society to provide a social foundation for information systems and a reliable basis for the development of commercial information systems.

As outlined above, Applicant submits that the present invention begins from a very different theoretical basis than the technologies in the cited references and brings this theoretical basis into a practical form that is also very different from the technologies in the cited references and would not have been obvious to a person skilled in the art. Applicant submits that the systems of the present invention answer a long-felt need that has not been adequately addressed by conventional technologies.

Based on at least the foregoing arguments, Applicant submits that independent claim 6 is in condition for allowance. Claims 7-17 depend from claim 6 and for similar reasons, as well as the additional limitations therein, are also believed to be in condition for allowance.



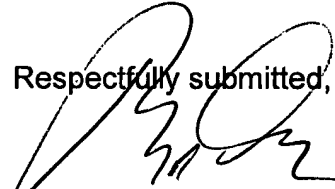
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**Conclusion:**

In view of the foregoing amendments and remarks it is respectfully submitted that this application is in condition for allowance. Favourable consideration and prompt allowance are earnestly solicited.

Respectfully submitted,



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